

Visibility and Reputation of New Entrepreneurial Projects from Academia: the Role of Start-Up Competitions

Roberto Parente¹ · Rosangela Feola¹ ·
Valentina Cucino¹ · Gemma Catolino¹

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Abstract Academic spin-offs, i.e., new venture projects backed by one or more researchers, are attracting increasing attention by researchers and policy makers as an effective way to increase the rate of technology transfer from Public Research Organizations (PROs) to the business environment. With the aim of supporting technology transfer processes, in the last years, many universities have carry out specific policies and a wide range of programs addressed to the development of academic entrepreneurship. Among these, the organization of a start-up competition is rather popular. But, how effective do such activities result, in particular the start-up competitions, in supporting academic researchers toward entrepreneurship? Are these kinds of initiatives able to raise the level of the reputation of academic entrepreneurial projects? If so, would such social capital have any real impact on the entrepreneurial development of academic spin-off? Is this social capital able to improve the spin-off's ability to gain access to and acquire an initial stock of resources? Our exploratory research, following the emerging paradigm of the Quadruple-Helix Model, takes into consideration the mediating role of Media players in building visibility and reputation of nascent entrepreneurial projects from academia. The study that we performed is based on the results of web citations of business projects that won at least one prize awarded by an academic start-up competition. We consider the 2013 edition of the Italian universities business plan competitions (PNI), and we tried to measure the *visibility and the*

✉ Roberto Parente
rparente@unisa.it

Rosangela Feola
rfeola@unisa.it

Valentina Cucino
valentina.cucino@gmail.com

Gemma Catolino
gemma.catolino91@gmail.com

¹ University of Salerno, Via Giovanni Paolo II, 132, Fisciano, SA, Italy

reputation effect experienced by winners of local and national steps of the business plan competition. Implications of the study might be that investing in start-up competition is a useful mechanism to gain in visibility and might be useful as an ignition mechanism to start a positive entrepreneurship discourse about academic spin-offs among stakeholders that control access to valuable resources for them.

Keywords Media and new ventures · Start-up competitions · Technology transfer

Introduction

Academic spin-offs, i.e., new venture projects backed by one or more researchers, are attracting increasing attention by researchers and policy makers as an effective way to increase the rate of technology transfer from Public Research Organizations (PROs) to the business environment. Unfortunately, the potential benefits related to the direct involvement of the researchers in the exploitation of their innovative knowledge is frequently countered by significant barriers in the process of new ventures creation (Vohora et al. 2004). Academic spin-off companies, as a peculiar typology of innovative start-ups, may experience additional handicaps that arise from their academic status (Siegel et al. 2003) and then from the different set of values and rules that characterize the system of public research compared to that of business environment (Dasgupta and David 1994). These differences can result in a lack of credibility and a limited reputation, necessary to gain access and to acquire the initial stock of resources required for the business to begin to function (Vohora et al. 2004).

With the aim of supporting technology transfer processes, in the last years, many universities have promoted policies and specific activities supporting the business projects of academic teams. The set of university support mechanisms is varied (Fini et al. 2011), but among these, the start-up competitions are rather popular (Siegel et al. 2007).

But, how effective do such activities result, in particular the start-up competitions, in supporting academic researchers? In particular, are these kinds of initiatives able to raise the level of the reputation of academic entrepreneurial projects? If so, would such social capital have any real effect on the entrepreneurial projects of academic teams?

The theme of resource acquisition is, in our opinion, directly related to the problem of reputation of a new firm. Reputation is defined by Fombrun (1996) as the collective knowledge about and regard for the firm and is considered, in the resource-based theory perspective, as a social and intangible resource able to foster for the firm sustainable competitive advantage (Barney 1991; Dierckx and Cool 1989). In our opinion, it is possible to identify a virtuous circle among reputation, acquisition of resources and the development of academic spin-offs. Increased reputation could give credibility to the project, both internally and externally to the team, and then enhance interest on the part of external subjects to provide the new firms with the required resources. Following the emerging paradigm of the *Quadruple-Helix Model* (Carayannis and Campbell 2012) and the *Signaling Effect Approach* (Fombrun and Shanley 1990), two are the key elements in the reputation building process: civil society that receives and interprets information about new entrepreneurial projects and *media communications* i.e. the

channels through which information about entrepreneurial projects reaches potential stakeholders.

Starting from the literature, and considering the specific features of academic spin-offs, our study aims to investigate how start-up competitions (specialized contests that reward entrepreneurial projects promoted by academic researchers) through the mediating role of media communication, can affect the reputation of entrepreneurial project and start-ups promoted by academic researchers.

We consider the 2013 edition of the Italian universities business plan competitions (PNI), and measure the *reputation effect* of participation deriving for winners of local and national steps of the competition.

Implications of the study lie in the suggestion that investing in start-up competition might be a useful mechanism to gain in visibility and a useful ignition mechanism to start a positive entrepreneurship debate on academic spin-offs with stakeholders that control access to valuable resources.

Theoretical Frame of Reference

Academic Spin-Off as a Vehicle for Technology Transfer

Academic spin-offs represent a specific category of new-technology-based firms and can be seen as a means of technology transfer from university to business (Bonaccorsi and Daraio 2007). Academic spin-offs are considered by many scholars in technology transfer as an effective means to exploit commercially innovations that come from academic research in the context of the so called Mode 2 of new knowledge production. Mode 2, in particular implies closer interaction of the many actors involved throughout the process of knowledge production making this process more socially accountable (Gibbons et al. 1994).

The complexity of this peculiar tool of technology transfer has not been underestimated. Academic spin-off experiences the typical difficulties associated with the development of new technologies and more. In particular, academic spin-off companies face various types of risks.

The firms in question are characterized by a high level of technological uncertainty, due mainly to the characteristics of the technology on which they are based (Dollinger 2003). In most cases, these are technologies that introduce radical innovations with a predominant component of tacit knowledge. Usually such technologies are in an early stage of their development and with a business scope vaguely defined (Shane 2004). Consequently, these characteristics reflect the difficulty of identifying a priori the potential developments of technology and the incapacity to determine the real value of the opportunity.

A further type of risk concerns the market and in the first place, the problem of the acceptance of the new products by potential customers.

Moreover, due to the characteristics relative to the appropriation capacity of the new technology, these account for the higher market risk associated with investing in academic spin-offs and not always are resolved by intellectual property rights (Fini et al. 2011). Academic spin-off might not be able to appropriate the rents from their technologies because they may lack the complementary resources/technologies to

exploit them and the resources to efficiently locate and involve partners able to provide them (Roberts 1991; Roberts and Malone 1996).

Another kind of obstacle concerns the concept of entrepreneurial commitment and the consequent change of mentality and role that is required to a researcher. The difference lies in the divergent aims and beliefs of researchers and entrepreneurs (Brett et al. 1991) and in the different set of values and rules that characterize the system of PRO compared to that of business (Dasgupta and David 1994). Such differences could result in a limited entrepreneurial intention and in a weak commitment on the part of academic entrepreneurs (Vohora et al. 2004; Parente and Feola 2013).

With specific reference to academic spin-off companies, Vohora et al. (2004) distinguish between entrepreneurial intention, configured as the “state of mind” of researcher the focus of whose commitment is on opportunities for economic exploitation of scientific research, and entrepreneurial commitment identified instead, as the complex of decisions and actions that bind promoters of academic spin-off relative to the future exploitation of such opportunity. The formation of a real entrepreneurial commitment is a necessary step in order to go beyond the threshold of merely assessing the economic feasibility of a project and to engage actively investing time and resources in order to create a spin-off company. It often makes the difference between academic spin-offs that are kept back and those that continue on their development path (Sorrentino 2008).

Academic Spin-Off and the Quadruple-Helix Model

The necessary conditions to support the development of academic spin-offs, as a specific form of technology transfer and as peculiar typology of innovative start-ups, could well be explained following the more recent and frequently overlooked model of Quadruple-Helix (Carayannis and Campbell 2012).

The Quadruple-Helix Model represents an extension of the Triple-Helix Model that adds to the three helices of the model a fourth helix identified as the “media-based and culture-based public” as well as the “civil society.”

The Triple-Helix Model developed by Etzkowitz and Leydesdorff (2000), pivots on three helices that intertwine generating a national innovation system: academia/universities, industry, and state/government. In this model, the authors emphasize the role of networks and university-industry-government relations placing particular attention on “tri-lateral networks and hybrid organizations.”

The Quadruple-Helix Model suggests that communities have a prominent role into advanced innovation system: communities use and apply knowledge so they become key players in the innovation system. In the context of the Quadruple-Helix Model the term communities is a general, broad based concept that means in particular the media-based and culture-based public and civil society but also includes other aspects such as culture, and principally innovation culture; the knowledge of culture and the culture of knowledge; value and life styles; multiculturalism, multicultural and creativity; media, arts and arts universities; multilevel innovation system with universities of the sciences and universities of the arts. The breadth of the concept is encouraging the development of “Creative Knowledge Environments”, defined as contexts with “characteristics that exert a

positive influence on human beings engaged in creative work aiming to produce new knowledge or innovation” (Resetarits and Resetarits-Tincul 2012).

With specific reference to academic spin-off companies, the four helices of the model play a specific role. In particular:

- Government, at various levels (supra-national, national, and local), has to adopt a set of rules to promote and support innovative start-ups.
- Universities have to promote policies and instruments to develop the entrepreneurial orientation of their researchers and give support to academic spin-offs.
- Industry and finance have to provide the necessary resources to start up the firms in a structured manner.
- Civil society has to be ready to accept the innovative projects launched by academic spin-offs.

University and public/civil society are the key actors that can be considered at the origin of the development process of academic spin-off. Their crucial role in the process by which stakeholders develop a reputational beliefs about new firms is a necessary pre-conditions to attract external subjects to the project.

In this context, in recent years many universities have promoted policies and instruments to develop the entrepreneurial orientation of their researchers and to give support to academic spin-offs. The set of universities support mechanisms is varied, depending on the phase of intervention, the subjects targeted, the type of support provided, the nature and type of resources mobilized and the institutional setting in which they operate (Fini et al. 2012). An initial set of policies is targeted at the emergence of entrepreneurial ideas both from inter-faculty and students, to increase their awareness of the possibilities of starting a new business and pursuing an entrepreneurial career (Mustar and Wright 2010). Such tools include Business Plan Competitions and Technology Transfer Services (Siegel et al. 2007). In recent years, there has been a worldwide boom in start-up competitions. In Italy too fresh start-up competitions have been added to those already in existence. In this respect, Business Plan Competitions could represent the *first test* for academic entrepreneurial projects. These initiatives, on the one hand, represent the first time for researchers to convert their own research into an entrepreneurial project and on the other, represent a *window* through which to communicate the project to community and civil society.

Civil society is the final beneficiary of new entrepreneurial projects. In this contest, longitudinal studies have documented that society at large can benefit from the commercialization of advanced knowledge only when the local context in which academic spin-off are set is “fertile” enough to leverage academic resources (Florida 1999). The key argument is that surrounding communities must have the capabilities to absorb and exploit the science and knowledge that they generate.

Such absorptive capacity refers, on the one hand, to the acceptance of the firm’s products (market feasibility of the project) and on the other, to the acceptance of the firm as an organization.

It is on the latter and on the role that the civil society plays in the legitimization process of a start-up that we focus our attention.

Quadruple-Helix Model and the Building Process of Entrepreneurial Project's Reputation

The specific features of academic spin-offs result in a limited ability to access and acquire key resources required for the business to begin to operate (Vohora et al. 2004).

As is generally the case for the start of knowledge-based new businesses, in obtaining resources from the outside they cannot leverage on the availability of tangible assets or historical reliability: either one or that the other is absent (Sohl 2003).

The main problem for a spin-off, and in more general terms for a start-up, is that of acquiring a favorable reputation among key stakeholders, who will then decide to get in touch and exchange knowhow and invest resources as they believe both the promoters reliable and the initiative and the business idea sufficiently credible.

The firm's *reputation*, defined by Fombrun (1996) as the collective knowledge about and regard for the firm in its organizational field to new firms, is widely considered to be a valuable intangible resource that leads to sustained firm competitive advantage (Barney 1991; Dierckx and Cool 1989; Amit and Schoemaker 1993). Hall (1992) finds that executive ranked reputation as the most important of 13 intangible resources. According to Resource-Based Theory intangible resources such as reputation significantly contribute to the performance differences in firms and organizations because they are rare, socially complex and difficult to trade and imitate (Itami 1987; Barney 1991; Peteraf 1993; Amit and Schoemaker 1993). Several studies have shown that a good reputation provides significant benefits for a firm (Deephouse 2000; Rao 1994; Roberts and Dowling 2002). Firms with a positive reputation benefit because they are more attractive to investors, customers, suppliers, and employees. This attractiveness can yield advantages in price, cost, and selection. Other studies show a correlation between firm reputation and performance (Itami 1987; Fombrun and Shanley 1990; Hall 1992)

In this context, in particular, organizational theorists also consider the legitimacy as an intangible asset that determines the ability of organizations to garner capital and personnel thus impacting on the survival of organizations (Dowling and Pfeffer 1975; Hannan and Freeman 1989). Legitimacy offers an anchor-point for the normative and cognitive forces that constrain, construct, and empower organizations (Suchman 1995). For a new venture, legitimacy reflects the acceptance of the organization by its environments, validated through the lens of potential stakeholders and public, that the venture's activities are socially acceptable and desirable (Sahaym 2013). Legitimacy helps new venture overcome the liability of newness by facilitating access to the resources necessary to survive (Corley and Gioia 2004).

Reputation and legitimacy can be viewed as two complementary aspects of the social identity of organizations (Rao 1994). Models of reputation emphasize tight coupling between endowments and evaluations, while models of legitimacy pay attention to the collective processes by which reputation is created and sustained. Reputation becomes an outcome of the process of legitimation, where legitimation means not only the normative justification of an organization but also the social validation of organization of an entity as desirable, proper, and appropriate in a specific system (Berger and Luckmann 1966).

However, empirical studies of how organizations gain a legitimation and how that legitimation generates a positive reputation are very limited (Wiley and Zald 1968; Miles 1982; Wilson 1985), in particular if we consider the case for start-ups.

For a start-up, in fact, the problem of gaining an organizational legitimation and acquiring a favorable reputation is more complex. Because new ventures do not have a past; have no or limited track records, potential customers and partners or the other potential stakeholders, may have limited information on which to base their assessment of the quality and reliability of a new venture (Fernhaber and McDougall-Covin 2009). This has been defined as an external liability of newness (Rao 1994). In the early stage of a new business, very often the reputation of the company corresponds to that of its founder: there is an identification of the company with the *persona* of its founder. The first problem is then to move from the reputation of founder to a legitimation of organization converting the same into a favorable reputation.

In the case of academic spin-offs, this process is very difficult because the legitimation of new venture is made even more complicated by the specific features of academic entrepreneurs. The peculiarity lies in the circumstances that academic spin-offs are a direct expression of a non-commercial, scarcely business-oriented environment and are promoted by subjects with a scientific background and with a mindset, competencies, relations and behavior that are very often completely different from those required in business contexts. For these reasons, in the eyes of stakeholders, academic entrepreneurs are generally regarded with some diffidence.

In a study concerning the legitimation process of spin-offs (Sahaym 2013), the author highlights a paradox: on one hand, the affiliation of a spin-off with the parent firm provides legitimacy that can be leverage for success; on the other, a stronger affiliation makes it difficult for a spin-off to resolve the ambiguity of identity and to develop the latter within a new sector.

Starting from such considerations, the research question posed is: How can a new firm, in particular an academic spin-off, gain legitimacy and develop a favorable initial reputation?

In the building process of legitimacy and reputation, economists emphasize the importance of signals—actions of statements that seek to reveal to the market a firm's true strategic type (Shapiro 1983; Milgrom and Roberts 1986).

Following the Signaling Effect approach, two are the key elements in the reputation-building process (Fombrun and Shanley 1990):

- Signals that are information that the public receives concerning the firm whether directly from the firm itself or via other information channels;
- Channels that are the vehicle through which signals reach potential stakeholders.

Relative to the first element, Fombrun and Shanley distinguish various types of signals that relevant public may receive concerning companies and which can influence their perception of the firm. Such signals vary according to whether they originate within or outside the company, and with respect to the type of information that they contain. Past research on young firms have identified the kinds of signals that can contribute to give legitimation and enhance their reputation, including founders' track records, high-status partners, or wins in certification contests (Deutsch and Ross 2003; Rao 1994; Shane and Cable 2002; Stuart et al. 1999).

However, studies on how certification contests could have positive effect on legitimation and reputation are very limited and in more general terms this kind of signals has been overlooked as a source of cognitive validity and social standing in the organizational legitimacy literature.

Certification contests are defined as contests organized in many industries, by special-purpose organizations, to evaluate products or firms and rank-order participants according to their performance on given criteria, in some cases with prizes awarded to winners in yardstick competitions (Holmstrom and Tirole 1989). Such certification contests are social tests of products and organizations (Thompson 1967) wherein the technical criteria chosen to evaluate performance are themselves the outcomes of institutional processes.

Rao (1994), in his study concerning the American automobile industry, suggests that victories in certification contests are credentials that enable firms to acquire a reputation for competence.

Victories in such contests legitimate organizations and validate their reputation because of the taken for granted axiom that the winners are better than losers and the beliefs that contests embody the idea of rational and impartial testing. The author suggests that winning organizations acquire cognitive validity in the eyes of risk-averse consumers and financiers. Victories in contests “explain” the organizations to consumers, financiers, and competitors and justify organizations by investing them with a veneer of reliability. Cumulative victories in contests are likely to enrich the reputation of winning organizations, improve their access to resources, and thereby enhance their survival prospects (Rao 1994).

As concerns the second element, i.e. the vehicle of diffusion of signals, a key role in this process is played by mass media communications because they act as filters through which information reach the public, the community, and potential stakeholders of new firms. In other words, mass media represent a channel to give visibility to the firm and divulgate information about it.

Several studies have showed that mass communication could be very important in the reputation process (Deephouse 2000) because market participants and potential stakeholders form reputation beliefs on the basis of information transmitted by information intermediaries (Fombrun 1996). Media are central in institutional environment to disseminates information about various aspects of social life (McQuail 1985). Mass communication research has documented that the media influences public opinion by “setting the agenda,” i.e., focusing attention on specific issues (Katz 1987). Public are more likely to perceive as important the domains that receive the greatest media attention (McQuail 1985).

The media acts not only as a vehicle for advertising and mirror of reality reflecting firms’ actions but also as an active agent shaping information through editorials and feature articles (Fombrun and Abrahamsn 1988).

Studies assumed that media contain information available for processing by stakeholders in making reputational assessment, consistent with the signaling role of reputation (Weigelt and Camerer 1988), and they contribute to create the media reputation of a firm, defined as the overall evaluation of a firm presented in the media (Deephouse 2000). Some authors (Burt 1983) assume that firms frequently and non-negatively touted by the media might develop better reputations than other firms because they occupy a more central position in a social network.

Starting from this literature, and considering the specific features of academic spin-offs, our study aims to investigate how academic spin-offs gain legitimacy and develop reputation. In particular, following the signaling theory approach, we investigate the signaling effect of start-up competitions (specialized contests that reward entrepreneurial project promoted by academic researchers) through the mediating role of media communication.

Research Design

Research Hypothesis and Methodology

The research aims to investigate whether business plan competitions, promoted by academia have an impact on the legitimation and reputation process of entrepreneurial project promoted by academic researchers.

Obviously, winning a start-up contest may have a great impact on the visibility of a business project, but the question is whether such a result is valid in developing a positive entrepreneurial debate.

In this respect, we attempt to answer the following research questions: How effective are start-up competitions in supporting new ventures that come from PROs? Do these competitions have any effect, not only in terms of visibility, but also on the reputation of the academic entrepreneurial projects? What is, in particular the role of media communication in the development of reputation of new academic spin-offs?

Our research is exploratory in nature and its aim is to generate a more well-defined and testable research hypothesis.

The research considers the finalists of the 2013 edition of PNI—National Innovation Award. The National Innovation Award (PNI) is the leading competition for innovative business projects coming from academic teams of the Italian universities. The National Innovation Award started since 2003, has the aim of promoting the creation of new companies from academia. The PNI is organized in two steps: the first takes place on a Regional basis and is based on the *start-up competitions* promoted locally in each regions by the Italian universities participating in the initiative; the second consists in a final round where all the winners of regional competitions come together to compete for the national prizes. The selection of the winning ideas at both levels, regional and national, is carried out by an independent panel of experts who evaluate the business plans submitted by the teams. The announcement of the winners takes place following a public presentation of the projects.

The 2013 edition of PNI involved 15 regional business plan competitions organized by more than 30 Italian universities. The 15 regional groups of winners were selected during the last week of September 2013. The 2013 National Contest took place in Genoa one month later, on October 31.

The 2013 edition of PNI generated a total of as follows:

- 3307 aspiring entrepreneurs;
- 1278 business ideas;
- 528 business plans.

Of these, 55 business plans were selected as regional winners by the 15 regional commissions and were admitted to the final stage of National PNI to contend for the 4 sectorial awards (Life Science, Information Technology, Agrifood/Cleantech, and Industrial) one of which was indicated as the First National Prize for Innovation and four special awards.

From the methodological point of view, the research is based on a quantitative and qualitative analysis of the number of mentions and comments about a project before and after the victory in the competition. A lapse of time in this manner was considered: one month before the day of the regional start-cup award ceremonies (P1), one month, i.e. the period between the regional start-cup ceremonies and the PNI awards ceremony (P2), and one month following the date of the PNI awards (P3).

The analysis covered the entire amalgam of participants to the final stage of the PNI, i.e. so all the winners of each regional start cup, making a total of 55 start-ups. The total amount represents the dataset of the analysis.

Data Collection and Data Analysis

The data used for the analysis were acquired through the use of Google APIs, tools made available by Google to allow the content research on the web. A particular search query was given as input, every single web page inherent to the issue was obtained. To ensure that every web page obtained dealt with the start-up object of the query, the context of the web page was checked including the verification of at least one compound term on the web page inherent to the start-up. This process was repeated for all queries of each start-up analyzed. Once the web pages set for each start-up were extracted, it was possible assign each page to a time period, from the date of appearance of the page in question on the web. It is worth noting that we choose to discard from the analysis all the web pages appearing during the two days immediately following the announcement of the winners of a start cup. This was done in order to avoid the analysis of the web pages that merely reported the occurrence of the event, i.e. merely providing information without expressing any relevant opinions (e.g., new from online magazines).

Once the set of web pages to be analyzed has been collected, we classified each web page by applying a clustering technique able to assign each page to a given category. For our goal, we choose to distinguish between web pages of blogs, specialized journals, and digital magazines. All the web pages that were not possible to include in such categories (because of the low level of similarity) were placed in the cluster named “other.” Our clustering technique used as metric for putting two web pages in the same cluster the indications provided by the known information retrieval method, called Latent Semantic Indexing (LSI) (Deerwester et al. 1990). In particular, given (i) the textual content and (ii) the metadata of a web page, LSI creates term vectors (vectors representing the terms contained in a web page) and plots them within a Cartesian space. The similarity between two vectors is given by the cosine of the angle between two vectors. If the cosine value is 0, then the two vectors are orthogonal and they have null degree of similarity: in our case, this means that if two web pages deal with different topics, they would be placed in different clusters. On the other hand, if the cosine value is close to 1, then the two web pages deal with similar topics and they should be components of the same cluster. In the context of our analysis, we

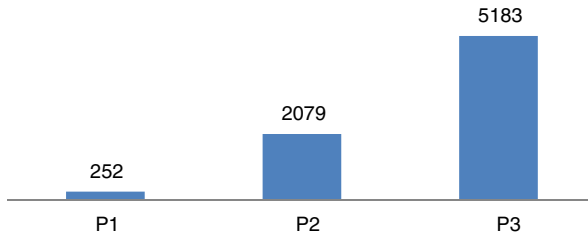


Fig. 1 Number of comments

choose to adopt a value of 0.68 as a threshold level to discern whether the similarity between two pages was sufficient for putting two elements in the same cluster.

The quantitative analysis of the number of online discussions of a start-up was carried out by measuring the absolute frequency of the number of online discussions during identified different time periods. Finally, each page was analyzed with Deeply Moving (Socher et al. 2013), a tool from Stanford University to describe the semantic content of a web page, in order to extract sentiments, described by a nominal scale (negative, neutral, and positive). To each start-up, a percentage of negative comments, a percentage of positive comments, and a percentage of neutral comments were assigned, for each time period.

As regard the analysis of the absolute frequency of the number of online discussions about start-up participants, to provide an overview of the phenomenon, we analyzed the relationship between the number of comments received by the 55 finalists to the national prizes in the P1, P2, and P3 periods. The average number of the citations for each of the 55 finalists was then provided. Finally, we divided the comments in all the 3 periods between positive, negative, and neutral comments. Only for the P3 period did we further split positive, negative, and neutral comments between the 8 national winners (four winner of categories and four winners of special awards) and the other non-winner finalists.

Results of Research

Being selected as a start-up competition winner implies a remarkable increase in visibility. In fact, citations about the 55 regional winners jumped from 252 in period P1 (the month before they were selected as regional winners) to 2.709 in period P2 (the month following the nomination as regional winners), up to 5.183 in period P3 (the month following the closing of the national contest) (Fig. 1).

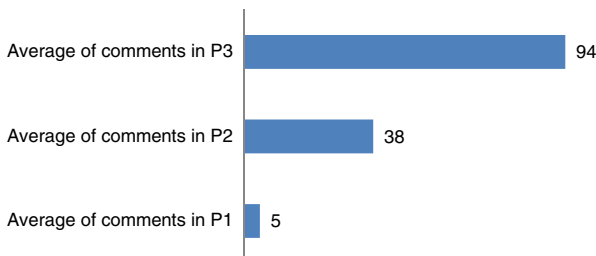


Fig. 2 Average number of comments in each period

Table 1 Insight from the number of comments in each period about the PNI 2013 finalists

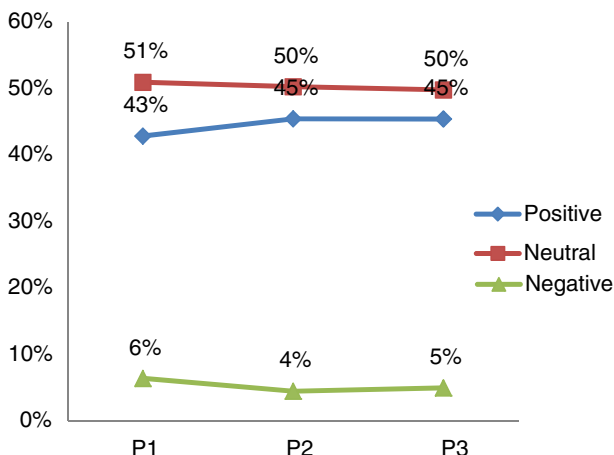
		P1	P2	P3
Losers	Number of comments	217	1801	4368
	Average number of comments	5	38	93
	P2/P1		8.30	
	P3/P2			2.43
Winners	Number of comments	35	278	815
	Average number of comments	4	35	102
	P2/P1		7.89	
	P3/P2			2.93

Therefore, the average number of citations of each of the regional winners increases from 5 (P1) to 38 (P2) and then to 94 (P3) (Fig. 2).

If we look in particular at period P3, we can see that the winners of the final phase of the national contest (the 8 regional winners who received an additional national prize) and non-winners of the national contest (the other 47 winners of regional competitions attending the national contest but did not receive a national prize) we observe significant differences: the project also receiving a national prize, saw an increase in their comments by 2.93 times in period P3, while the other saw an increase by 2.43 times (Table 1).

In any event, when we consider in depth the issue of the content of those citations we see an overwhelming of neutral and positive comments about the 55 projects. The percentage of neutral comments does not change very much along the 3 periods (about 50 %). Negative comments are quite few (from 5 to 6 %) and positive comments are in the order of 45 % (Fig. 3).

Along period P3, we checked for differences between national winners and national non-winners and found only slight differences in the order of ± 2 % (Fig. 4).

**Fig. 3** Variation of average percentage of negative positive and neutral comment through the three periods

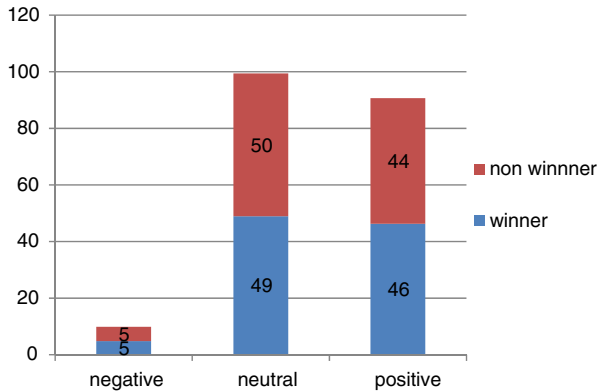


Fig. 4 Percentage of comments in P3

In Fig. 5, it clearly emerges that there is great interest about start-up competition with a special focus on broadcasting the research and entrepreneurial commitment of academia, rather than going into detailed business analysis of the entrepreneurial projects. If we classify the comments for source, results show that most of the comments are from generalist newspaper. However, a relevant percentage of comments are also localized in specialist magazines and journals, demonstrating the fact that this kind of visibility also reaches potentially useful stakeholders for the project.

Even when we distributed the source of comments between the 8 winners of national prizes and the other 47 non-winner finalists, we found no difference in the comments distributed.

There are several signals to confirm that winning a start-up competition can have an impact on the entrepreneurial development of an academic spin-off.

First of all, it is very likely that winning a start-up competition can raise the entrepreneurial commitment of the team and that this commitment is proportionally as strong as and as prestigious as the prize obtained.

Analyzing the 55 finalists of PNI, in the year following the competition, we observed relevant results for national winners compared to regional winners.

In particular, among 47 regional winners, 36 % decided to start a proper company. That percentage grew to 50 % in the case of the national winner (Table 2). We do not have a precise figures about the number of companies that were founded by the other 473 teams that attended (but were not selected) the regional contests. However, if we

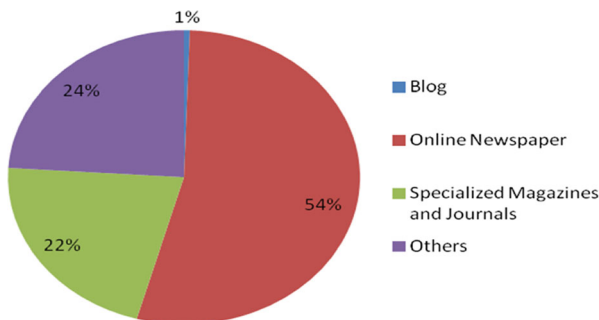


Fig. 5 Comments per source

Table 2 No. spin-off started

	Total	No. spin-off started	
		Number	%
Regional winners	47	17	36
National winners	8	4	50

consider that in 2014, there were only about 110 new academic spin-off companies in Italy that we can assume that in the best scenario only 23 % of them were transformed into proper companies. Realistically speaking, it can be assumed that the percentage is much less, i.e. in the order of 10 %.

Moreover, the winners seemed able to obtain more positive results in acquiring access to external valuable resources. Again, this ability grows passing from regional winners to national winners (Table 3).

In fact, 50 % of national winners in the year following the competition have been involved in extraordinary transactions in terms of a partnership and/or an operation of M&A, compared to the 23 % of regional winners.

Conclusions and Implications

The most relevant effect of attending and winning a start-up competition is on the entrepreneurial commitment of the academic team. Start-cup competitions, however, can be of great value for the participants, especially those winning one of the national prizes posted. In particular, media coverage of an event such as the Italian PNI is good and can end in a signaling effect (Parente 2013) of the value of the winning projects. Nevertheless signaling effects can significantly be improved, because neutral comments are still the majority of the comments posted by the media. This might be due to the fact that media coverage of a start-cup competition such as PNI is mainly made of generalist media, rather than media specialized in business and entrepreneurship.

Investing in a start-up competition could be a good investment to develop entrepreneurial universities. Unfortunately, universities by themselves do not have the incentive to invest in such competitions, making available high-value services for perspectives participants. The rate of success, at least at the national level, is very low. A specific

Table 3 No. of business development operations

	No. spin-off started	No. spin-offs that have made extraordinary transactions*	
		Number	%
Regional winners	17	4	23
National winners	4	2	50

incentive by the national government to each university could impact positively at least in terms of the figures on the number of spin-offs started.

Our study was exploratory in nature, and there are a number of issues that need further development. First of all, it seems necessary to analyze more than one PNI edition. Furthermore, it might be interesting to study in depth the issue both of the nature of media that cover the event and of the stakeholders informing about the PNI event to the media.

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